TRUEHEAT

FOIL HEATING MAT SYSTEM
INSTALLATION MANUAL

Contents

1 Important Safety Information

WARNING: Risk of Electric Shock and Fire

Incorrect installation or damage to this heating cable system may result in electric shock, fire, serious injury, or damage to property. To reduce these risks, all instructions in this manual must be followed carefully.

- This system **must be used with a suitable thermostat.**
- **Do not connect the heating cable to a plug** or temporary power supply.
- **Do not turn the power on to the system while the cable is coiled.**
- This underfloor heating system **must be carried out by a suitably qualified and competent electrician** in accordance with BS 7671 (IET Wiring Regulations) and all applicable UK statutory requirements.
- The heating cable is **intended for fixed indoor underfloor heating installations only.**
- The cable **must be fully embedded** in mortar, thinset, concrete, or similar material.
- Do not install the heating cable in walls or ceilings.
- **Do not cut, shorten, cross, repair, modify, or splice** the heating cable.
- The minimum spacing between adjacent cable runs is **60 mm.**
- The minimum installation temperature is **5°C.**
- Take care to ensure the cable is not damaged by **nails, screws, fixings, or sharp objects,** either during installation or future floor works.

  If the heating cable or any part of the system is **damaged at any time, it must not be used and must be replaced.**

  Where installed in bathrooms or other special locations, installation must comply with the relevant requirements of **BS 7671.**

Failure to follow these instructions may void the warranty and create a serious safety hazard.

2 General Information

2.1 Use of This Manual

This manual explains how to:

- Design your heated floor area
- Select the correct heating cable
- Install and commission the system safely

Before installation, **also read the Thermostat Installation and Operation Manual** supplied with your thermostat.

For further assistance, contact:

TrueHeat
Email: mail@TrueHeat.co.uk
Website: www.TrueHeat.co.uk

2.2 Safety Guidelines

The safety and reliability of this floor heating system depend on **correct design, installation, and testing.** Incorrect handling or installation can damage the heating cable and create a risk of fire or electric shock.

Always pay special attention to instructions marked:

IMPORTANT or WARNING

3 Measuring Electrical Resistance (Very Important)

The electrical resistance of the heating cable **must be measured and recorded four times during installation:**

1. Out of the box
2. After laying the cable on the floor, or in a decoupling membrane
3. After embedding in mortar / self-levelling compound or after the final floor finish has been laid
4. After final connection (before connecting to the mains)

Failure to measure and record these values will **void the warranty.**

How to Measure

- Measure resistance between the brown and blue wires using a suitable multimeter
    - The value must be within –5% to +10% of the value in the Product Selection Table
- Measure resistance using an insulation resistance meter, between:
    - Brown ↔ earth
    - Blue ↔ earth
    - Both must read **infinity (open circuit)**

If readings are outside these values, **stop installation and contact TrueHeat.**

4 Warranty Summary

TrueHeat provides a **lifetime warranty** to the original purchaser on the heating cable against defects in materials and workmanship, starting from the date of purchase. (See the back of this book for a comprehensive guide to the warranty)

or online: **www.TrueHeat.co.uk/warranty**

The warranty is valid only if:

- The warranty certificate is completed and returned
- Resistance readings are recorded at all required stages
- The system is installed exactly in accordance with this manual

5 Foil Heating Mat System Overview

5.1 Technical Specifications

- Cable type: Twin conductor
- Rated voltage: 230 V
- Output: 140W per m2
- Cable spacing within the foil heating mat: 50 mm
- Cable diameter: 1 mm
- Conductor insulation: Fluoropolymer
- Outer insulation: Nylon
- Maximum ambient temperature: 30°C
- Minimum installation temperature: 5°C
- Cold lead: 2-wire + earth braid, 2.5 m length
- Indoor use only

5.2 Typical Installations

The heating cable may be installed:

- Directly on concrete (with suitable insulation beneath)
- Directly on plywood (with suitable insulation beneath)
- Embedded in thinset or self-levelling compound
- Within a decoupling membrane

Compatible floor finishes include:

- Engineered wood
- Laminate

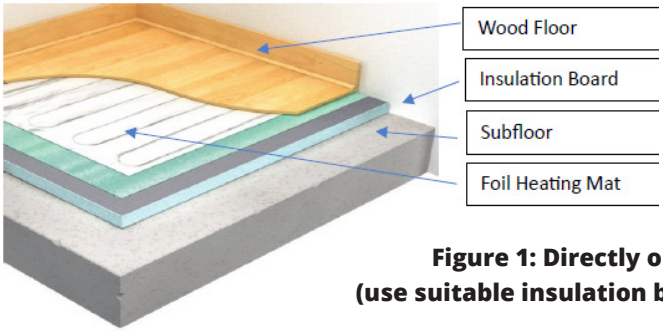


Figure 1: Directly on concrete (use suitable insulation beneath the mat)

- Vinyl (Including LVT)
- Carpet (check manufacturer limits)

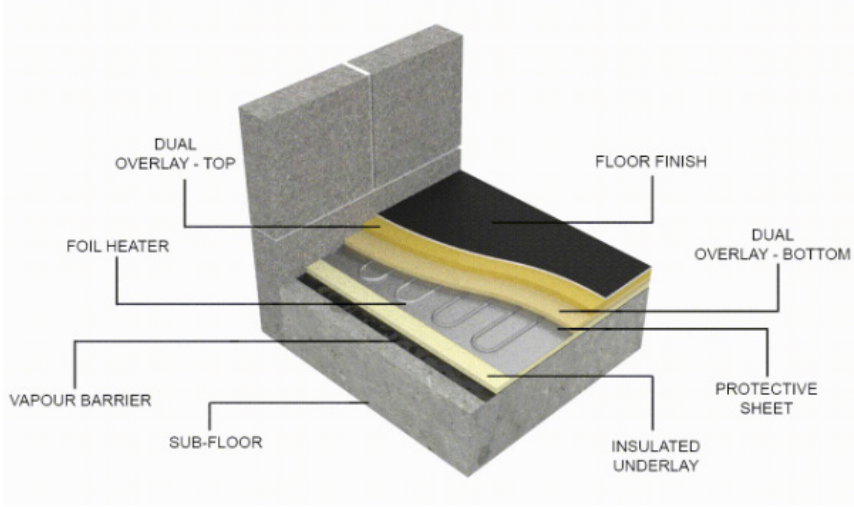


Figure 2: Directly on concrete (use suitable insulation beneath the mat)

WARNING

For wood, laminate, vinyl, or linoleum floor finishes, **always consult the floor covering manufacturer** for any special installation requirements, including maximum permitted floor temperatures.

IMPORTANT – Installation Requirements

Read **all instructions in this manual carefully** before installing the heating cable system.

Any metal structures, reinforcement, or conductive materials that support or are in contact with the heating cable **must be correctly earthed** in accordance with current UK Wiring Regulations (BS 7671).

If you are unsure about any aspect of installation or operation, **contact TrueHeat for advice** before proceeding.

6 Floor Heating Design & Product Selection

Step 1: Measure the Heated Area

Measure only the free floor area.
Do not include areas beneath permanent fixtures such as:

- Baths
- Showers
- Toilets
- Cabinets
- Appliances
- Or any furniture that has less than 50mm ground clearance

Subtract 10% from your figure to allow for perimeter clearances around the edge of the room.

Step 2: Confirm Supply Voltage

The system is designed for **nominal 230 V supply** in accordance with UK electrical standards.

Note:

- Operating at 220 V reduces output by approx. 8.5%
- Operating at 240 V increases output by approx. 8.9%

Step 3: Plan the Layout

- Maintain the designed cable spacing
- Do not alter the spacing during installation
- Position the thermostat so it can be reached by:
  - 2.5 m cold lead
  - 3 m floor temperature sensor

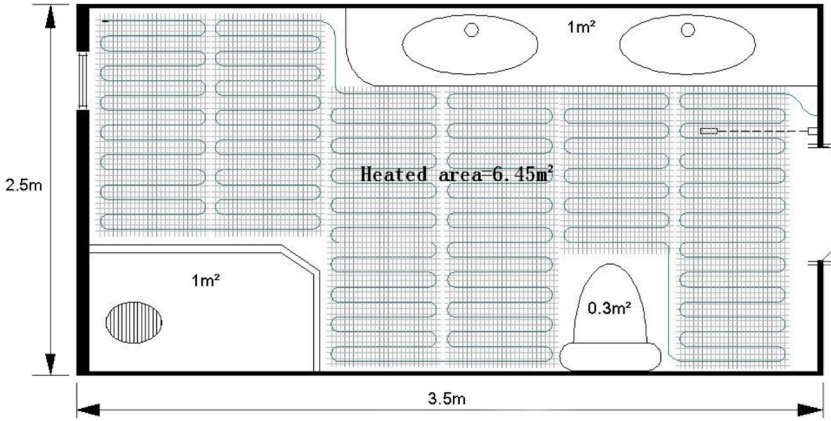


Figure 3: Heated area example

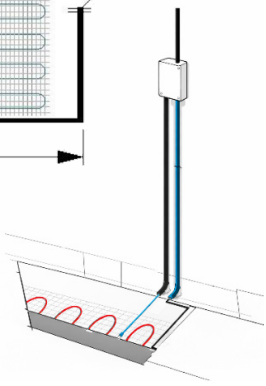


Figure 4: Typical cold lead and floor temperature sensor

Step 4: Confirm Your Product Selection

- Confirm that your foil heating mat is no larger than the heated area.
- Following the example from Figure 3, if the heated area is 6.45 m2, select the 6.0 m2 Foil Heating Mat system.

Use the Product Selection Table below

230V Heating Mats - Technical Data

Cat No.	Heated Area (m2)	Heated Area (m2)	Mat Size (m)	Mat Size (m x ft)	Power (W)	Current (A)	Resistance (Ω)
HM/140/1	1.0	10.8	0.5 x 2	20 x 6.6	140	0.61	377.9
HM/140/1.5	1.5	16.1	0.5 x 3	20 x 9.9	210	0.91	251.9
HM/140/2	2.0	21.5	0.5 x 4	20 x 13.1	280	1.22	188.9
HM/140/2.5	2.5	26.9	0.5 x 5	20 x 16.4	350	1.52	151.1
HM/140/3	3.0	32.3	0.5 x 6	20 x 19.7	420	1.83	126.0
HM/140/3.5	3.5	37.7	0.5 x 7	20 x 23.0	490	2.13	108.0
HM/140/4.0	4.0	43.1	0.5 x 8	20 x 26.3	560	2.43	108.0
HM/140/4.5	4.5	48.4	0.5 x 8	20 x 23.3	560	2.43	94.5
HM/140/5.0	5.0	53.8	0.5 x	20 x 32.8	700	3.04	75.6
HM/140/6.0	6.0	64.6	0.5 x	20 x 39.4	840	3.65	63.0
HM/140/7.0	7.0	75.3	0.5 x	20 x 45.9	980	4.26	63.0
HM/140/8.0	8.0	86.1	0.5 x	20 x 52.5	1120	4.87	54.0
HM/140/9.0	9.0	96.9	0.5 x	20 x 59.1	1260	4.87	47.2
HM/140/10	9.0	96.1	0.5 x	20 x 66.6	1400	6.09	37.8
HM/140/12	10.0	107.6	0.5 x	20 x 20.8	1680	6.09	37.8
HM/140/12	12.0	129.2	0.5 x	20 x 78.8	1680	7.30	31.5

7 Installation Instructions

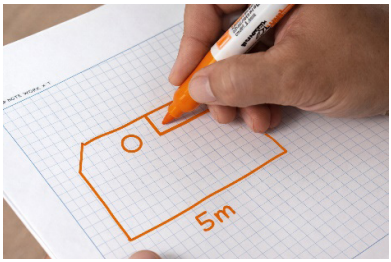
Tools Required

- Scissors
- Utility knife
- Wire strippers
- Tape measure
- Screwdriver
- Digital multimeter
- Insulation resistance meter

Floor-specific tools and materials may also be required.

Installation Steps (Summary for laying on floor)

Step 1: Plan the Layout



Begin by producing a simple sketch layout or floor plan of the room. This should clearly show all fixed and permanent items such as toilets, baths or showers, appliances, built-in furniture, and cabinetry, as these areas must not be heated.

The first step is to calculate the amount of heating mat coverage required. While it is possible to achieve close to 100% floor coverage, TrueHeat recommends allowing a clearance of **20–40 mm** around the perimeter of the room.

Measure the internal dimensions of the room from **skirting board to skirting board** and deduct **20–40 mm** from each measurement. Using these adjusted dimensions, sketch the room layout and calculate the total available floor area suitable for heating.

Ensure that all relevant dimensions are clearly marked on the sketch, including the proposed position of the thermostat. Spending a short amount of time planning at this stage can significantly reduce installation time and help avoid errors during fitting.

Important:
TrueHeat recommends documenting the installation with photographs, clearly showing the location of all connections and the floor sensor.

Step 2: Prepare the Subfloor Surface

The foil heating system must **not** be installed in tile adhesive, thin-set cement, or in direct contact with a concrete or cement subfloor.

A suitable **soft insulation or underlay** must always be installed beneath the aluminium heating mat.

Carefully inspect the subfloor and ensure it is clean, smooth, and free from sharp edges, protruding fixings, or debris that could damage the heating mat. Vacuum the floor thoroughly and ensure the subfloor is secure, stable, and free from movement. Fill any cracks or voids before proceeding.

Step 3: Install the Insulation Board

Install a minimum **6 mm XPS or IZOtherm insulation board** directly beneath the heating mat.

Lay the boards in a staggered (brick) pattern and tape all joints securely to prevent movement during installation.

Step 4: Measure the Resistance (First Test)

Once the insulation boards have been installed, remove the Foil Heating Mat from its packaging and carry out the first resistance test. Recording resistance readings at each stage of installation is mandatory for warranty validation.

Refer to **Section 5: Commissioning** for detailed testing instructions.)

Step 5: Transfer the Layout to the Floor

Transfer the planned layout onto the floor by marking the outline of the heated area and the footprint of all fixtures that are not yet installed.

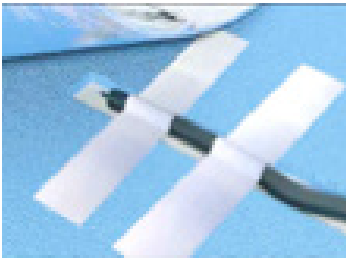
Unroll the first 1–2 metres of the foil heating mat. The starting point of the foil heating mat must be located within **2.5 m** of the thermostat position.

Important:
Clearly mark the connection point between the power lead and the foil heating mat cable.

Mark the sensor position:

- Centred between two heating cables
- Approximately **250 mm** from the wall
- Fully within the heated area
- As close as practicable to the thermostat location

Step 6: Install the Floor Sensor

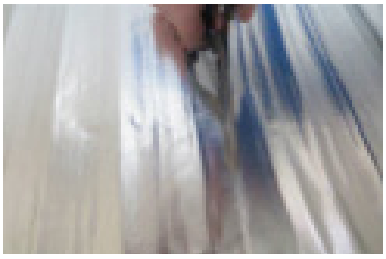


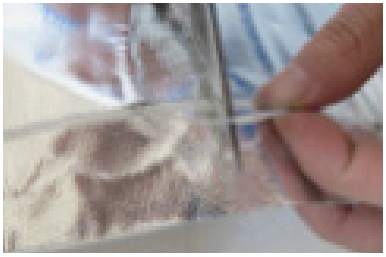
The sensor must be installed inside a **conduit tube**, allowing it to be replaced if required. The conduit should run from the thermostat wall box to the sensor position and be partially recessed into the insulation board.
Cut a channel approximately **8 mm × 8 mm** in the floor and wall to accommodate the conduit.
The conduit must extend at least 250 mm into the heated area and be positioned between two heating cables.

Feed the sensor cable through the conduit until it emerges at the end. Route the sensor cable back to the thermostat location and connect it to the correct terminals.

Important:
The sensor conduit **must** be centred between two heating cables.

Step 7: Lay the Foil Heating Mat





Position the heating mat so that the connection point and floor sensor are correctly located. Route the power lead back to the thermostat or junction box.
Begin unrolling the mat evenly across the floor, avoiding the previously marked unheated areas. When a wall or obstacle is reached, carefully cut the aluminium foil mesh **only** (do **NOT** cut the heating cable), turn the mat, and continue laying in the required direction.

After laying, ensure the heating mat always remains in full contact with the insulation board. Avoid walking on the mat wherever possible. If unavoidable, wear soft-soled footwear.

Important:
Take photographs of the fully installed heating mat before covering it.
Never cut or shorten the heating cable.

Step 8: Join the Aluminium Foil Sheets

Join adjacent foil sheets using a minimum of **two strips of self-adhesive aluminium foil tape.**

The tape provides electrical shielding and continuity; therefore, all foil sections must be electrically connected.

Step 9: Measure the Resistance (Second Test)

Repeat the resistance tests and record the results on the warranty card. (Refer to **Section 5: Commissioning** for detailed testing instructions.)

Step 10: Install the Wood Floor Covering

Ensure the sensor conduit has been correctly installed before proceeding.

Before laying the final floor covering, briefly energise the heating mat to confirm operation. Gentle warmth should be felt within a few minutes.

Proceed with installing the floor covering, taking care not to damage the heating mats. Do not drive nails or screws into the floor and do not cut flooring panels while positioned over the heating mat.

Important:
If the floor covering is not installed immediately, protect all heating mats with cardboard. **Immediately before installing the floor, test the heating mat again to confirm no damage has occurred in the interim.**

Step 11: Measure the Resistance (Third Test)

Repeat the resistance tests once the final floor finish has been laid and record the results on the warranty card.
This test confirms the system has not been damaged during floor installation.

Step 12: Connect the Power Supply and Thermostat

Connection of the power supply and thermostat **must be carried out by a suitably qualified and competent electrician** in accordance with BS 7671 (IET Wiring Regulations) and all applicable UK statutory requirements.
The electrician must connect:

- The heating mat
- The floor temperature sensor
- The mains power supply. (The system is designed for nominal 230 V supply in accordance with UK electrical standards.)
- Carry out the final (fourth) resistance check prior to turning the power on.

Note:
The electrician must ensure the appropriate circuit breaker identification label is completed to clearly identify the circuit supplying the underfloor heating system.

The circuit supplying the underfloor heating system must be protected by a suitable **RCD** in accordance with **BS 7671**. An appropriate means of electrical isolation must be provided for the underfloor heating system in accordance with **BS 7671**

Step 13: Record Information and Affix Labels

The warranty certificate must be completed and returned immediately after installation of the heating mat and thermostat.
Failure to submit the warranty documentation may invalidate the manufacturer's warranty.

Retain a copy of the completed warranty card for future reference.

Step 14: Enjoy the Comfort of Foil Underfloor Heating

The Foil Heating Mat system is now ready for use. Increase the floor temperature gradually and adjust it to a comfortable level suitable for the room type and personal preference.

8 Commissioning

Important:
If the floor covering is not installed immediately, protect the heating mats with cardboard. Immediately before installing the floor, test the heating mat to ensure no damage has occurred.

To qualify for the **Lifetime Warranty**, all required tests must be performed, recorded on the warranty card, and retained for reference.
The following tests must be carried out four times during installation:

- **8.1 Insulation Resistance Test**

- Confirms cable insulation integrity.
- Both power cables to the red test lead, the earth to the black test lead and set the tester to 1000V, it should give OL (Infinity) or no reading at all, in accordance with the test procedure described.

- **8.2 Foil Heating Mat Cable Resistance Test**

- Confirms circuit integrity.
- Red to Live (Brown) Black to Neutral (Blue) set to 200 or 2000 Ohms, the reading should be no more than -5% or +10% of the stated ohms on the product label and box.

8.3 Sensor Resistance Test

- Confirms sensor functionality (9–25 kΩ).
- The Reading will change dependant on the room temperature. Contact TrueHeat if you have any doubt about the reading of the floor sensor.

If any test fails, stop and contact TrueHeat.

The underfloor heating system must not be energised until all mortar or levelling compounds are fully cured. A minimum curing period of 14 days is recommended.

9 Troubleshooting

Symptom	Probable Causes	Corrective Action
Floor doesn't heat	No voltage.	Check circuit breaker.
	Circuit breaker tripped.	Ensure that there are not too many mats or other appliances connected on the same circuit. The underfloor heating mat may require a dedicated circuit. See the Product Selection Table of this manual.
	Ground-fault tripped in the thermostat.	Refer to Thermostat Installation and Operation Manual.
	Thermostat not turned on.	Refer to Section 4 (Step 12) of this manual, and the Thermostat Installation and Operation Manual.
	Cable not connected to Thermostat.	Refer to Thermostat Installation and Operation Manual.
	Floor temperature sensor not connected.	Refer to Thermostat Installation and Operation Manual.
	Faulty floor sensor.	Contact TrueHeat mail@trueheat.co.uk
Floor warm all the time	Clock not set correctly.	Refer to Thermostat Installation and Operation Manual.
Floor not warm enough	Thermostat setting not set correctly.	Refer to Thermostat Installation and Operation Manual.
Installation instructions not available		Contact TrueHeat at mail@trueheat.co.uk

10 Disposal

- Dispose of this product in accordance with local regulations for electrical equipment.
- Do not dispose of with household waste.

TrueHeat Manufacturer's Lifetime Warranty

(UK Consumer Warranty)

For the purposes of this warranty, the term "heating cable" refers to the fixed electric heating element supplied by TrueHeat for installation beneath floor finishes.

1. Who This Warranty Is For

- This warranty is provided by TrueHeat to the original end user purchaser of the TrueHeat underfloor heating cable for use in domestic or residential applications within the United Kingdom.
- This warranty is non-transferable and applies only to the original installation at the original address.

2. Statutory Rights

- This warranty is provided in **addition to your legal rights under the Consumer Rights Act 2015.**
- Your statutory rights **are not affected** by this warranty.

3. What Is Covered

TrueHeat warrants that the underfloor heating cable will be free from defects in materials and manufacture for the lifetime of the product, starting from the date of purchase, provided that:

- The defect was present at the time the product was supplied

  The product has been installed and used in accordance with TrueHeat's installation instructions and applicable UK regulations

4. Conditions of Warranty

This warranty is conditional upon:

- Completion and return (or online submission) of the TrueHeat warranty registration form. All submissions will receive a warranty certificate.
- All required resistance test readings being recorded at the specified installation stages
- Installation being carried out by a suitably qualified and competent installer in accordance with current UK electrical regulations
- Failure to meet these conditions may result in the warranty claim being declined, but does not affect your statutory rights.

5. What Is Not Covered

This warranty does not apply to defects or failures resulting from:

- Incorrect or non-compliant installation
- Accidental damage, misuse, abuse, or neglect
- Alteration or modification of the product
- Failure to follow installation, testing, or operating instructions
- Normal wear and tear

6. Inspection and Claims Process

If you believe the product is defective, you must contact TrueHeat Customer Services before removing or replacing the product.

TrueHeat may require the heating cable to be:

- Inspected & Tested in situ, or
- Returned to TrueHeat or an authorised service partner for examination (if not yet installed)
- You may be required to demonstrate that the defect was present at the time of supply.

7. Remedy

Where a valid warranty claim is accepted, TrueHeat will, at its discretion:

- Repair the defective heating cable, or
- Supply a replacement heating cable of equivalent specification
- This warranty applies to the heating cable only.

8. Installation and Reinstatement Costs

Where a manufacturing defect is confirmed, TrueHeat will be liable for reasonable costs directly related to:

- Repair or removal of the defective heating cable, and
- Installation of a replacement heating cable
- TrueHeat's liability for such costs is limited to a maximum of five (5) times
- the original purchase price of the product per claim.

9. Consequential Loss

Subject to your statutory rights, TrueHeat shall not be liable for indirect or consequential losses, including loss of profit, loss of use, or other economic loss arising from the failure of the product.

10. Limitations of Liability

Nothing in this warranty limits or excludes TrueHeat's liability for:

- Death or personal injury caused by negligence
- Fraud or fraudulent misrepresentation
- Any liability which cannot be excluded or limited under UK law

11. How to Make a Warranty Claim

To submit a warranty claim, please contact TrueHeat Customer Services here https://www.TrueHeat.co.uk/contact and provide:

1. Details of the suspected manufacturing defect
2. Date of purchase and date of installation
3. Installer and electrician details (where applicable)
4. Recorded resistance test readings
5. Proof of purchase and product serial number

TrueHeat will provide you with a claim reference number and advise on the next steps.

12. Governing Law

This warranty is governed by the laws of England and Wales and applies to products installed within the United Kingdom.

13. General Information

TrueHeat reserves the right to make changes to product design and specifications without prior notice, provided such changes do not adversely affect products already supplied.

All trademarks referenced are the property of their respective owners

Notes


TRUEHEAT